

REMARKS

Claims 6 to 10 are now pending. Claim 6 has been amended. No new matter has been added.

Applicants respectfully request reconsideration of the present application in view of this amendment.

Claims 6 to 8 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,611,916 to Yoshizumi (the "Yoshizumi reference") in view of U.S. Patent No. 3,635,552 to De Lang (the "De Lang reference")

The Yoshizumi reference purportedly concerns an optical measuring apparatus whose measuring light having frequency f_1 is focused and its beam spot irradiates a surface of an object fixed on a carrier. Title and Abstract, lines 1-3. The Yoshizumi reference refers to shifting the carrier in a direction perpendicular to the optical axis of an objective lens to obtain measuring light reflected by the surface of the object; at the same time, reference light having frequency f_2 irradiates a mirror mounted on the carrier to be substantially perpendicular to the optical axis of the lens to obtain reflected reference light. Abstract, lines 3-10. The Yoshizumi reference further refers to interfering the reflected reference light with the reflected measuring light to detect a beat frequency to optically, precisely measure a shape of the surface of the object. Abstract, lines 10-13. See also, cols. 1-2.

Amended claim 6 recites:

A tunable interferometer for measuring an optical surface, comprising:
at least one light source;
a reference surface, light from the at least one light source impinging the reference surface, the reference surface reflecting a first interference beam;
a test object, light from the at least one light source impinging the test object, the test object reflecting a second interference beam;
at least one beam splitter, the first interference beam and the second interference beam striking the at least one beam splitter; and
a polarizer polarizing the first interference beam and the second interference beam so that the first interference beam and the second interference beam each have a different polarization state relative to one another; and
an analyzer positioned at an output of the interferometer, the analyzer having a variable polarization state, the analyzer tuning the interferometer as a function of the polarized first interference beam and the second interference beam, wherein depending on the polarization state of the analyzer, an additional

phase is introduced into at least one of the first and second interference beams of different polarizations so that an interference fringe pattern is displaced by a distance.

The Yoshizumi reference does not teach or suggest at least the feature of an analyzer positioned at an output of the interferometer, the analyzer having a variable polarization state, the analyzer tuning the interferometer as a function of the polarized first interference beam and the second interference beam, as in claim 6. Further, the Yoshizumi reference is believed to teach and/or suggest adjusting the position of a carrier upon which the test object is fixed. In direct contrast, claim 6 requires an analyzer, which is positioned at the output of the interferometer and has a variable polarization state, to tune the interferometer. Accordingly, the Yoshizumi reference does not teach or suggest the claim feature(s) of amended claim 6.

The secondary De Lang reference purportedly concerns an optical interferometer having a beam splitter and a means for circularly polarizing the split beams into mutually opposite directions. Title and Abstract, lines 1-3. The De Lang reference further refers to redirecting the circularly polarized beams to an analyzer to generate a phase interference pattern which is detected by photodetection devices. Abstract, lines 3-5. See also, col. 2.

The De Lang reference does not cure the deficiencies of the Yoshizumi reference. While the De Lang reference does include an analyzer, the De Lang reference does not include at least the feature(s) of a reference surface, light from the at least one light source impinging the reference surface, the reference surface reflecting a first interference beam, an analyzer tuning the interferometer as a function of the polarized first interference beam and the second interference beam wherein depending on the polarization state of the analyzer, an additional phase is introduced into at least one of the first and second interference beams of different polarizations so that an interference fringe pattern is displaced by a distance, among other things, as in amended claim 6. Further, the De Lang reference refers to its purpose as providing an interferometer suitable for measurements of phase differences which vary in time comparatively rapidly – by converting partial beams into beams circularly polarized in opposite senses by

means of polarization-optical expedients, a linear polarizer being arranged in the path of the recombined partial beams. See col. 1, line 71 - col. 2, line 6.

Further, Applicants maintain that the Yoshizumi and De Lang references are not combinable since, among other reasons, the Yoshizumi reference teaches away from positioning an analyzer to tune the interferometer in its purported teaching of adjusting the carrier holding the test object; and, the De Lang reference is focused on solving an entirely different purpose than the Yoshizumi reference.

Accordingly, the Yoshizumi reference and the De Lang reference, alone or in combination, do not render obvious claim 6 of the above-identified application. Since claims 7, 8 and 10 depend from claim 6, those claims are also allowable for at least the same reasons as for claim 6. Thus, withdrawal of the rejection of claims 6 to 8 and 10 under 35 U.S.C. § 103(a) over the Yoshizumi reference in view of the De Lang reference is respectfully requested.

Claim 9 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the Yoshizumi reference in view of U.S. Patent No. 5,627,666 to Sharp et al. (the "Sharp reference")

Since claim 9 depends from claim 6, the Yoshizumi reference does not teach or suggest the features of claim 9 for at least the same reasons as those discussed above for claim 6.

The secondary Sharp reference purportedly concerns a liquid crystal phase modulator using cholesteric circular polarizers. Title. The Sharp reference refers to using a phase modulator comprising an electro-optically rotatable smectic liquid crystal half-wave retarder in combination with a cholesteric liquid crystal circular polarizer. See Abstract, lines 1-4. The Sharp reference further refers to providing a polarizing interferometer which utilizes the phase modulator in combination with a second cholesteric circular polarizer and a linear polarizer. See Abstract, lines 5-8.

The Sharp reference does not cure the deficiencies of the Yoshizumi reference. The Sharp reference does not teach and/or suggest at least the features of an analyzer positioned at an output of the interferometer, the analyzer having a variable polarization state, the analyzer tuning the interferometer as a function of the polarized first interference beam and the second interference beam wherein depending on the

polarization state of the analyzer, an additional phase is introduced into at least one of the first and second interference beams of different polarizations so that an interference fringe pattern is displaced by a distance.

Accordingly, the Yoshizumi reference and the Sharp reference, alone or in combination, do not render obvious claim 9 (depending from now-amended claim 6) of the above-identified application. Thus, withdrawal of the rejection of claim 9 under 35 U.S.C. § 103(a) over the Yoshizumi reference in view of the Sharp reference is respectfully requested.

Moreover, to reject a claim as obvious under 35 U.S.C. § 103, the prior art must disclose or suggest each claim element and it must also provide a motivation or suggestion for combining the elements in the manner contemplated by the claim. (See Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934 (Fed. Cir. 1990), cert. denied, 111 S. Ct. 296 (1990)).

Likewise, the Court in the case of In re Jones stated that:

Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been *motivated* to make the modifications . . . necessary to arrive at the claimed [invention].

In re Jones, 21 U.S.P.Q.2d at 1943 & 1944 (citations omitted; emphasis added). In short, there must be evidence of why a person having ordinary skill in the art would be motivated to modify a reference to provide the subject matter of the claims.

In summary, it is respectfully submitted that all of claims 6 to 10 are allowable for the foregoing reasons.

It is respectfully submitted that the rejections of claims 6 to 10 under 35 U.S.C. § 103(a) should be withdrawn.


CONCLUSION


In view of all of the above, it is believed that the rejections of claims 6 to 10 have been obviated, and it is respectfully submitted that all claims 6 to 10 are presently allowable. It is therefore respectfully requested that the rejections be withdrawn, and that the present application issue as early as possible.

If it would further allowance of the present application, the Examiner is invited to contact the undersigned at the contact information shown below.

Respectfully submitted,

By:


Richard L. Mayer
(Reg. No. 22,490)

By: 
Reg. No. 4784

Dated: January 26, 2004

CUSTOMER NO. 26646

KENYON & KENYON
One Broadway
New York, New York 10004
(212) 425-7200 (telephone)
(212) 425-5288 (facsimile)